

REMARKS

Amendment to the Specification

Applicant respectfully submits that the amendment to the specification finds support in the application as originally filed.

Support for the underground reservoir facilities comprising at least one of a depleted natural gas or oil field, an aquifer, and a salt cavern is found in the specification as originally filed. For example, Page 10, Paragraph 21 discloses “underground natural gas reservoirs.” As would be appreciated by one having ordinary skill in the art, underground natural gas reservoirs fall into three categories: (1) depleted reservoirs in oil and/or gas fields, (2) aquifers, and (3) salt cavern formations. Applicant has included evidence from the website of the Energy Information Administration, which is an agency of the U.S. Department of Energy, as support for this knowledge in the field. The evidence is entitled, “The Basics of Underground Natural Gas Storage” and can be found at:

http://www.eia.doe.gov/pub/oil_gas/natural_gas/analysis_publications/storagebasics/storagebasics.html

Additional evidence from the same website is entitled “Definitions, Sources and Explanatory Notes” and can be found at:

http://tonto.eia.doe.gov/dnav/ng/TblDefs/ng_stor_sum_tbldef.asp

Applicant has also submitted an Affidavit under 37 C.F.R. 1.132 as further evidence that underground natural gas reservoirs are known in the art to fall into three categories: (1) depleted reservoirs in oil and/or gas fields, (2) aquifers, and (3) salt cavern formations.

Therefore, Applicant respectfully submits that no new matter has been introduced by the amendments to the specification and that the specification is currently in condition for allowance.

Amendments to the Claims

Applicant respectfully submits that the amendments to Claims 1, 4, 10, 11, and 17, and newly presented Claims 21 and 22 find support in the application as originally filed.

Regarding Claims 10, 21 and 22, support for the underground natural gas reservoir comprising at least one of a depleted natural gas or oil field, an aquifer, and a salt cavern is found in the specification as originally filed. For example, Page 10, Paragraph 21 discloses “underground natural gas reservoirs.” As would be appreciated by one having ordinary skill in the art, underground natural gas reservoirs fall into three categories: (1) depleted reservoirs in oil and/or gas fields, (2) aquifers, and (3) salt cavern formations. Applicant has included evidence from the website of the Energy Information Administration, which is an agency of the U.S. Department of Energy, as support for this knowledge in the field. The evidence is entitled, “The basics of Underground Natural Gas Storage” and can be found at:

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Therefore, Applicant respectfully submits that no new matter has been introduced by the amendments to the claims and that the claims are currently in condition for allowance.

Drawings

Applicant has replaced the original drawings with new corrected drawings in compliance with 37 CFR 1.121(d) as requested by Examiner. Applicant respectfully submits that the drawings are currently in condition for allowance. Reconsideration and withdrawal of the objection is respectfully requested.

Claim Objections

Examiner objects to Claim 7, asserting that the recitation of “to control said liquid discharge flow” is unclear. Applicant assumes that Examiner intended to object to Claim 4, since Claim 4 contains this recitation, not Claim 7.

Claim 4 has been amended to change “liquid discharge flow” to “gas flow” as suggested by Examiner.

Applicant respectfully submits that Claim 4 and Claim 7 are currently in condition for allowance. Reconsideration and withdrawal of the objection is respectfully requested.

Examiner objects to Claim 17, asserting that the limitation “storing an ambient liquid in a high pressure storage unit” is unclear.

Claim 17 has been amended to change “storing an ambient liquid in a high pressure storage unit” to “storing a high pressure natural gas in an underground natural gas reservoir.”

Applicant respectfully submits that Claim 17 is currently in condition for allowance. Reconsideration and withdrawal of the objection is respectfully requested.

Claim Rejections – 35 U.S.C. §112

Claim 3 stands rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Examiner asserts that it is unclear what the recited “inner pressure carrier pipe” and “super insulation” are, rendering the claim indefinite.

Claim 3 has been amended to remove any confusion regarding the meaning of the claim.

Applicant respectfully submits that Claim 3 is currently in condition for allowance. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 U.S.C. §103

Claims 1, 2, 5-8, and 10-20 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Barclay (US 5,505,232) in view of Dowdell et al. (US. 3,735,600).

For a §103 obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at

the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. MPEP 2143.

Amended Claim 1 recites a gas pressurization system comprising "... an underground natural gas reservoir coupled to said pump discharge downstream of said recovery heat exchanger."

Barclay fails to disclose an underground natural gas reservoir coupled to the pump discharge downstream of the recovery heat exchanger, as recited in Claim 1. Examiner asserts that since the entire system in Barclay may be housed underground, storage unit 81 can be considered an underground storage reservoir. However, a buffer tank 81 does not constitute a natural gas *reservoir*. As would be appreciated by one skilled in the art, a natural gas reservoir is a structure that stores natural gas for use or delivery in the future, while the primary purpose of a buffer tank 81 is to accept and deliver natural gas simultaneously.

Furthermore, underground natural gas reservoirs are known in the art to be extremely large in order to accommodate high peak demand periods. The system in Barclay "is quite small and compact relative to traditional liquefaction and compression systems for natural gas." (Col. 5, lines 17-19). One of the objects of Barclay is to provide a system "compact enough to be enclosed in a vault underground at refueling stations to reduce land costs and increase safety." (Col. 5, lines 28-30). Therefore, it is clear that buffer tank 81 is not large enough to constitute an underground natural gas reservoir.

It is also well known in the art that underground natural gas reservoirs are not structures that are made above ground and then subsequently placed underground, such as buffer tank 81. Rather, underground natural gas reservoirs are known to be vast spaces that are created in the ground itself.

Applicant has submitted an Affidavit under 37 C.F.R. 1.132 as evidence that the buffer tank in Barclay does not constitute an underground natural gas reservoir. Evidence from the website of the National Energy Technology Laboratory (NETL) under the U.S. Department of Energy is included as support for this knowledge in the field. The evidence is entitled, "Transmission, Distribution & Storage: Natural Gas Storage" and can be found at:

<http://www.netl.doe.gov/scngo/NaturalGas/TD&S/Storage/index.html>

Additional evidence provided as "Program facts" from the U.S. Department of Energy is included, entitled "Natural Gas Storage." Even more evidence is included in the form of an article from "techline" entitled, "DOE, Penn State to Establish Gas Storage Technology Consortium: Goal is to Improve Performance of the Nation's Underground Gas Storage Infrastructure" which can be found at:

http://www.netl.doe.gov/publications/press/2003/tl_gasstorage_pennstate.html

All three pieces of evidence disclose that approximately 400 to 415 underground natural gas reservoirs in the United States account for almost 4 trillion cubic feet of storage capacity. That results in an average of approximately 9.6 billion cubic feet of storage capacity per underground reservoir. Even taking into account that some underground reservoirs are smaller than others, the buffer tank in Barclay would not even come close to having the same, or a comparable, storage capacity as even the smallest underground natural gas reservoir. Even if the smallest underground reservoir was 1/1000 the size of this average 9.6 billion cubic feet storage capacity, it would still

have a storage capacity of approximately 9.6 million cubic feet. Clearly, the “small and compact” buffer tank in Barclay that is meant to be placed at refueling stations and reduce land costs has nowhere near the storage capacity of an underground natural gas reservoir.

Therefore, Applicant respectfully submits that the buffer tank 81 in Barclay clearly does not constitute an underground natural gas reservoir as recited in Claims 1, 11 and 17.

Additionally, it would not be obvious to one ordinarily skilled in the art to modify the system in Barclay to include an underground natural gas reservoir. As mentioned above, the intended purpose of the system in Barclay is to provide a system compact enough to be placed at refueling stations and reduce land costs and increase safety. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP 2143.01. Since modifying Barclay to include an underground natural gas reservoir would render the system too large for its intended purpose, there is no suggestion or motivation to make such a modification.

Applicant respectfully submits that Barclay fails to disclose all elements of Claim 1 and that there is no suggestion or incentive that would have motivated the skilled artisan to modify Barclay in order to include all the elements of Claim 1. Therefore, Applicant respectfully submits that Claim 1 is currently in condition for allowance. Reconsideration and withdrawal of the rejection is respectfully requested.

Since Claims 2, 5-8 and 10 depend from Claim 1, Applicant respectfully submits that Claims 2, 5-8 and 10 are also patentable as they contain the same limitations as Claim 1.

Furthermore, Claim 10 recites the “gas pressurization system of claim 1 wherein said underground natural gas reservoir comprises at least one of a depleted natural gas or oil field, an aquifer, and a salt cavern.”

Barclay fails to disclose any one of a depleted natural gas or oil field, an aquifer, and a salt cavern, as required by Claim 10. Applicant cannot find any mention of these elements in Barclay.

Additionally, it would not have been obvious to one ordinarily skilled in the art to modify the system in Barclay to include any one of a depleted natural gas or oil field, an aquifer and a salt cavern. As mentioned above, the intended purpose of Barclay is to provide a system compact enough to be placed at a refueling station. Modifying Barclay to include any one of the structures listed in Claim 10 would render the system in Barclay unsatisfactory for its intended purpose. Therefore, there is no suggestion or motivation to make such a modification.

Applicant respectfully submits that Claims 2, 5-8 and 10 are currently in condition for allowance. Reconsideration and withdrawal of this rejection is respectfully requested.

The same arguments made above with respect to the patentability of Claim 1 are applicable to the patentability of Claim 11 as well. Therefore, Applicant respectfully submits that Claim 11 is currently in condition for allowance. Reconsideration and withdrawal of the rejection is respectfully requested.

Since Claims 12-16 depend from Claim 11, Applicant respectfully submits that Claims 12-16 are also patentable as they contain the same limitations as Claim 11.

Therefore, Applicant respectfully submits that Claims 12-16 are currently in condition for allowance. Reconsideration and withdrawal of this rejection is respectfully requested.

The same arguments made above with respect to the patentability of Claim 1 are applicable to the patentability of Claim 17 as well. Therefore, Applicant respectfully submits that Claim 17 is currently in condition for allowance. Reconsideration and withdrawal of the rejection is respectfully requested.

Since Claims 18-20 depend from Claim 17, Applicant respectfully submits that Claims 18-20 are also patentable as they contain the same limitations as Claim 17. Therefore, Applicant respectfully submits that Claims 18-20 are currently in condition for allowance. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 4 stands rejected under 35 U.S.C. §103(a), as being unpatentable over Barclay in view of Dowdell, and further in view of Hall (US 6,374,844 B1).

Since Claim 4 depends from Claim 1, Applicant respectfully submits that Claim 4 is also patentable as it contains the same limitations as Claim 1. Therefore, Applicant respectfully submits that Claim 4 is currently in condition for allowance. Reconsideration and withdrawal of this rejection is respectfully requested.

Claim 9 stands rejected under 35 U.S.C. §103(a), as being unpatentable over Barclay in view of Dowdell, and further in view of Emmer et al. (US 6,354,088 B1).

Since Claim 9 depends from Claim 1, Applicant respectfully submits that Claim 9 is also patentable as it contains the same limitations as Claim 1. Therefore, Applicant

respectfully submits that Claim 9 is currently in condition for allowance. Reconsideration and withdrawal of this rejection is respectfully requested.

Since Claims 21 and 22 depend from Claims 11 and 17 respectively, Applicant respectfully submits that Claims 21 and 22 are also patentable as they contain the same limitations as their respective parent claims.

Additionally, the same arguments made above with respect to the patentability of Claim 10 are applicable to the patentability of Claims 21 and 22 as well.

Therefore, Applicant respectfully submits that Claims 21 and 22 are currently in condition for allowance.

If the Examiner has any questions regarding this application, the Examiner may telephone the undersigned at 775-586-9500.

Respectfully submitted,
SIERRA PATENT GROUP, LTD.

A handwritten signature in black ink, appearing to read 'Kenneth D'Alessandro', with a long horizontal flourish extending to the right.

Kenneth D' Alessandaro
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In the Drawings:

Kindly replace original figures 1-6 with replacement figures 1-6.